

Leptothorax nordmeyeri, spec. nov., an interesting ant of subtropical India

(Insecta, Hymenoptera, Formicidae, Myrmicinae)

Andreas Schulz

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Leptothorax nordmeyeri is described as a new species of ants. Characteristical features of its morphology include: large eyes, long head, very long propodeal spines, the uniform pale yellow colour, and long, thin body hairs. The new species was recorded from a subtropical secondary monsoon forest in the south-western part of India. For *Leptothorax galeatus* Wheeler, 1927 a lectotype is designated.

Andreas Schulz, Feldstraße 18, D-42799 Leichlingen, Germany.

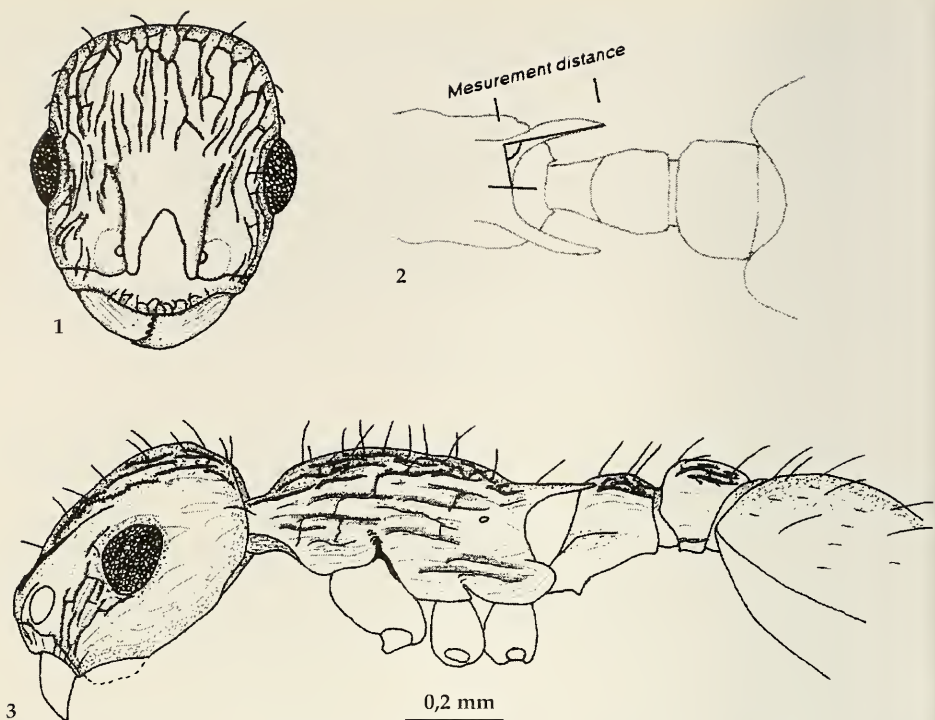
Introduction

Leptothorax Mayr, 1855 is a myrmicine monomorphic genus that is arranged in the tribus Formicoxenini (Bolton 1994). With a nearly world-wide distribution, excluding the Australian continent, it is the most diverse ant genus of the Holarctic region (Bolton 1991, Schulz unpubl.). The majority of the species are in the Holarctic region. Of more than 300 described species and infrasubspecific taxa, only 8 valid taxa occur in the subcontinent of India including the Himalayan mountains (Bingham 1903, Bolton 1996). On the other hand, nearly 30 undescribed species of *Leptothorax* have been detected only in the Himalayan region and additional 10 species in Indochina (Schulz unpubl.). Two Australian species originally described as *Leptothorax* were transferred by Bolton (1991) to his new genus *Vombisidris*. In more southern ecosystems of "Old World Tropics" the species richness of *Leptothorax* is very low. South of the Himalayan mountains and northern India the few *Leptothorax* species so far discovered have an arboreal lifestyle, in contrast to the probably terrestrial nesting of *L. nordmeyeri* (Floren 1995, pers., Schulz unpubl.).

Except for the afrotropical species, knowledge about taxonomy of *Leptothorax* in the Old World is in poor condition. Especially the knowledge of taxonomy of the Palaearctic species is very insufficient. In addition to the confused taxonomy on the species level, the generic limits within the tribe Formicoxenini (= Leptothoracini) are not clearly understood (Bolton 1991, Francoeur & Loisel 1988).

Measurements

All measurements were taken with a Zeiss Stemi SR stereo microscope with an ocular graticule, and are given in mm in the following succession: range [mean \pm standard deviation]. The absolute magnification of measurements was 250 \times .



Figs 1-3. *Leptothorax nordmeyeri*, spec. nov., holotype. 1. Head in frontal view. 2. Spines, caudal mesosoma waist in dorsal view, including the measurement method of propodeal spine length. 3. Mesosoma, head, waist and part of gaster in lateral view.

Abbreviations

- TL total length of specimens, measured with head in prognathous position
 HL maximum head length from midpoint of anterior margin of clypeal border to posterior margin of occipital border, measured with both borders in focus
 HW maximum head width behind the eyes, measured in full-face view
 SL maximum scape length, measured with both ends of scape in focus
 AD maximum eye diameter, measured in lateral view
 CI cephalic index: $HW/HL \times 100$
 SI scape index: $HW/SL \times 100$
 AI eye index: $AD/HW \times 100$
 ML means Weber's length
 MW mesosoma width, measured as the maximum distance of pronotum corners in dorsal view
 MI mesosoma index: $MW/ML \times 100$
 PSL propodeal spine length, measured in dorsal view, with the distal tip in focus. Details of measurement method shown in Fig. 1
 PSI propodeal spine index: $PSL/ML \times 100$
 PL maximum petiole length measured from insertion of posterior border of lateral propodeal lobe to midpoint of the petiole-postpetiole joint
 PH petiole height posterior border of highest point of angle to anterior border, measured in lateral view
 PI petiole index: $PH/PL \times 100$



Ruth v. S. Gaudin

Fig 4. *Leptothorax nordmeyeri*, spec. nov., holotype. Habitus (Zeichnung R. Kühbandner).

Leptothorax nordmeyeri, spec. nov.
(Figs 1-4)

Types. Holotype: 1 worker labelled "Indien_08: Goa, Distr. Mormugao, vic. Velsao, 5 km E. Dabolim Air Port, 50mH, 14.01.1997, Leg. A. Schulz, K. Vock". (in Zoologische Staatssammlung München). – Paratypes: 12 workers with same labels as holotype. Depository: 2 in Zoologische Staatssammlung München; 1 in Muséum d'Histoire naturelle, Genève; 2 in Staatliches Museum für Naturkunde Karlsruhe; 7 in the author's collection.

Main morphology as usual in the genus. Head robust, occipital corners evenly convex. Occipital margin without straight border. Margins of head sides not parallel but weakly convex behind eyes, evenly convex anterior of eyes up to the clypeal border. Compound eyes large. The longest distance through the eyes cuts about 15 ommatidia. Clypeus strongly convex, medially distinctly widened. Frontal carinae strong, ending on a hypothetical line through the median of the eyes. Frontal triangle clearly bounded, framed and slightly deeper than the surrounding parts of the head. From lateral view the frontal lobes distinctly project over the main profile of the head and the head is faintly depressed.

Description of worker

Measurements. Holotype worker: TL 2.25, HL 0.57, HW 0.47, CI 82, SL 0.50, SI 93, AD 0.15, AI 33, ML 0.65, MW 0.34, MI 53, PSL 0.21, PSLI 61, PL 0.30, PH 0.18, PHI 59.

Paratype workers: TL 2.0-2.5, HL 0.54-0.58 [0.56 ± 0.01], HW 0.43-0.47 [0.45 ± 0.02], CI 78-83 [80 ± 2], SL 0.48-0.51 [0.49 ± 0.01], SI 89-94 [91 ± 2], AD 0.14-0.16 [0.15 ± 0.004], AI 32-34 [33 ± 1], ML 0.60-0.66 [0.63 ± 0.02], MW 0.31-0.34 [0.33 ± 0.01], MI 50-54 [52 ± 2], PSL 0.20-0.23 [0.21 ± 0.01], PSLI 61-67 [64 ± 2], PL 0.22-0.30 [0.26 ± 0.03], PH 0.17-0.19 [0.18 ± 0.01], PHI 59-77 [71 ± 7] (n=10).

Scapes reach beyond the occipital margin by approx. 1/3 of its total length. Antennae with 12 segments, first funiculus segment 2.2 × as long as broad. Second funiculus segment as long as broad, the next 4 distal segments half as long as broad, next 2 segments as long as broad. With well defined 3-segmented apical club. Proximate club segment smaller and longer as the median segment. Distal

club segment 2.2 times as long as broad.

Mandibles nearly triangular and little compressed, with 3 large distal teeth, and 2 very small barely recognizable proximate teeth. Apical tooth larger than all other teeth.

Mesosoma typical of *Leptothorax*. In lateral view margin of mesosoma from the pronotal neck to the insertion of propodeal spines evenly convex. Mesosoma slightly compressed. Propodeal spines very long. Base of spines narrow. In profile the spines generally straight, quite thin and with a sharp tip directed nearly horizontally. In dorsal view the spines give the impression of a horseshoe, with straight distal parts.

Petiole barely stalked but elongate. From mesosoma the cranial dorsal margin proceeds evenly and slightly concave to the vertex. Petiolar dome regularly convex and proceeding up to the postpetiolar joint. In dorsal view the dome is depressed, and the petiole widens from mesosoma insertion up to the postpetiolar joint. Postpetiole broad, in dorsal view with slightly obliquely depressed.

Pilosity long, thin, distally somewhat pointed. Pilosity on gaster, petiole, postpetiole and spines longer than on mesosoma and head. Pilosity generally sparse. First gaster tergite with less than 20 hairs, occipital margin and border with only 5 erect hairs. Appendages with densely and semidecumbent pubescence.

Colour of body and appendages uniformly pale yellow. Mesosoma and waist slightly darker due to the more robust sculpture, teeth of the mandibles likewise little darker.

On head, mesosoma and waist the sculpture (definition after Harris 1979) relatively uniform and dense. Gaster evenly smooth and shining. Surface of head mainly costate to rugulose, frons and central part of vertex more shining and irregularly wrinkled. Intervals between the wrinkles diffuse sublucid. Genae rugose, frontal triangle smooth and shining. Region of occipital corners and margin stronger rugulose to rugose than the other parts of head. Distal part of clypeus rugulose, proximate part weakly rugulose or sublucid. Mandibles finely and weakly transversely costate. Mesosoma uniformly and more or less regularly rugulose with some longitudinal wrinkles. Surface between the wrinkles sublucid to smooth. Surface between the propodeal spines more finely sculptured. Waist rugulose, between the strong rugae some with finely reticulate-rugulose sculpture.

Female unknown.

Male unknown.

Collecting circumstances. *L. nordmeyeri*, spec. nov. was found in south-western India in the State of Goa. The place of discovery was a mosaic of cultured trees, shrubs, grass areas and single old Sal trees. During the approximately 5-months long dry season trees do not carry leaves in this area. Then, the soil surface dries out completely. The ground was covered with an about 1 cm thick layer of litter. In tropical ecosystems formicoxenine ants, especially those of the genus *Leptothorax*, are often rare or seem to be absent. Most of the world-wide known tropical species of *Leptothorax* are arboreal. In contrast to this, *L. nordmeyeri* probably has a cryptic lifestyle and a terrestrial nest. The nest of *L. nordmeyeri* was not discovered, the specimens were found approximately 5-10 cm deep in the ground in narrow gaits, closely related to an old Sal tree. This probably cryptical lifestyle and prognosted terrestrial nesting has been not yet recorded from any other Asiatic *Leptothorax* species. Most of the Holarctic species of *Leptothorax* live predominantly between small and thin stone slabs, under stones, in bark, or under pieces of wood on the ground, to guarantee an optimal insolation for growing up the brood. In tropical ecosystems they prefer arboreal strata, where the nests are located under bark, in arid twigs, or in epiphytes (Baroni Urbani 1978, Kempf 1959).

Dedication and derivatio nominis

This new *Leptothorax* species is dedicated to Mrs. Rose Nordmeyer. Mrs. Nordmeyer generously financially supported the biosystematic research at the Zoologische Staatssammlung München.

Differential diagnosis and comments on similar species.

There are clear morphological differences between *L. nordmeyeri* and the 250 described and undescribed *Leptothorax* species known to the author, namely the very uniformly pale yellow colour, the relatively regular dense and rugulose-reticulate sculpture, the large eyes, the elongate head with long scape, the convex mesosoma profile without metanotal groove, the terseness very long, barely curved

propodeal spines, the elongate, thin hairs, and the elongate, robust and low petiole node.

Only *L. galeatus* Wheeler, 1927 from China and *L. finzii* Menozzi, 1925 from eastern Mediterranean area are rather similar to *L. nordmeyeri* from the morphological view. But both species own clearly different character combinations, so an easy delimitation to *L. nordmeyeri* is possible.

L. nordmeyeri differs from *L. galeatus* by the smaller size (*L. nordmeyeri*: 2.0-2.5 mm; *L. galeatus*: >2.8 mm), the somewhat more elongate mesosoma, the more elongate head and the less erected petiole. *L. nordmeyeri* has relatively larger eyes than *L. galeatus* (AD 0.15-0.16 [0.16]), AI 27-29 [28] n = 3; *L. nordmeyeri*: (AD 0.14-0.16 [0.15 ± 0.004], AI 32-34 [33 ± 1]) The colour of all parts of *L. nordmeyeri* is uniform pale yellow, whereas *L. galeatus* has brown antennal clubs, a predominantly dark brown gaster, and a diffuse brown anterior part of the head. The main coloration of *L. galeatus* is bright orange brown.

Designation of the lectotype worker of *Leptothorax galeatus*: First label "Peking China R. H. Lefiuse" [Wheeler's handwriting], second "M. C. Z. Type j. 21025" [in part printed on red cardboard], third "Leptothorax galeatus Whlr. Syntype" [not Wheeler's handwriting], fourth "MCZ Museum of Comparative Zoology" [printed], fifth "LECTOTYPE *Leptothorax galeatus* Wheeler des.: A. Schulz 1997" [on red cardboard]. The lectotype of *L. galeatus* is deposited in the collection of the Museum of Comparative Zoology Harvard University USA.

L. finzii differs from *L. nordmeyeri* by the following characters: *L. nordmeyeri* is distinctly smaller than *L. finzii* (HL 0.58-0.72 [0.65 ± 0.04], ML 0.68-0.90 [0.79 ± 0.06] n=32; *L. nordmeyeri*: HL 0.54-0.58 [0.56 ± 0.01], ML 0.60-0.66 [0.63 ± 0.02]) and has clearly longer spines than *L. finzii* (PSL 0.09-0.17 [0.14 ± 0.02]; *L. nordmeyeri*: PSL 0.20-0.23 [0.21 ± 0.01]). Furthermore, *L. nordmeyeri* has an uniformly arched mesosoma profile, whereas *L. finzii* has a distinct and extensive metanotal groove. *L. nordmeyeri* has an elongated, robust and low petiole (Fig. 3), whereas the petiole of *L. finzii* is shorter and higher with a clear separate dorsal angle. *L. nordmeyeri* is more densely sculptured than *L. finzii*.

Zusammenfassung

Leptothorax nordmeyeri wird als eine neue Ameisenart beschrieben. Charakteristische Merkmale ihrer Morphologie sind: große Augen, länglicher Kopf, sehr lange Propodealdornen, einheitlich gelbe Färbung und lange, dünne Körperhaare. Die neue Art stammt aus einem subtropischen sekundären Monsunwald Südwest-Indiens.

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References

- Baroni Urbani, C. 1978. Materiali per una revisione dei *Leptothorax* neotropici appartenenti al sottogenere *Macromischa* Roger, n. comb. (Hymenoptera: Formicidae). – Entomol. Basil. 3: 395-618
- Bingham, C. T. 1903. Hymenoptera, vol. 2: Ants and Cuckoo-Wasps (The Fauna of British India, including Ceylon and Burma) – London, Taylor and Francis, 1-414
- Bolton, B. 1991. New myrmicine ant genera from the Oriental region (Hymenoptera: Formicidae). – Syst. Entomol. 16: 1-13
- 1994. Identification Guide to the Ant Genera of the World. – Harvard University Press, Cambridge, Mass., London, 222 pp.
- 1996. A New General Catalogue of the Ants of the World. – Harvard University Press, Cambridge, Mass., London, 504 pp.
- Floren, A. 1995. Diversität und Wiederbesiedlungsdynamik arborikoler Arthropodengemeinschaften in einem Tieflandregenwald auf Borneo, Sabah, Malaysia. – Diss. Julius-Maximilian-Universität Würzburg, 114 pp.

- Francoeur, A. & R. Loiselle 1988. The Male of *Leptothorax wilda* with Notes on the Subgenus *Nesomyrmex* (Formicidae, Hymenoptera), 43-54. – In: *Advances in Myrmecology* (Ed. James C. Trager), Brill, New York
- Harris, R. H. 1979. A glossary of surface sculpturing. – *Occ. Pap. Entomol.* **28**: 1-32
- Kempf, W. W. 1959. A synopsis of the New World species belonging to the *Nesomyrmex*-group of the ant genus *Leptothorax* Mayr (Hymenoptera: Formicidae). – *Stud. Entomol. (n.s.)* **2**: 391-432